

ABSTRACT OF THE DISCLOSURE

An indium phosphide based double hetero-junction bipolar transistor with an increased collector-base breakdown voltage and a reduced operational knee voltage is provided by manipulating the conductivity in the collector region. The collector is formed using layers of different conductivities, with a region of the collector relatively close to the base being unintentionally or low doped. A voltage drop across the unintentionally doped region reduces the maximum value of the electric field and the velocity of carriers injected into the collector region at the base-collector junction. The conductivity throughout the collector region may be graded such that the highest conductivity occurs near the sub-collector and lowest conductivity occurs near the base region.